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Fireballs in the Sky: an Augmented Reality Citizen Science Program

Fireballs in the Sky is an innovative Australian citizen science program that connects the public with the research of the Desert Fireball Network (DFN). This research aims to understand the early workings of the solar system, and Fireballs in the Sky invites people around the world to learn about this science, contributing fireball sightings via a user-friendly augmented reality mobile app. Tens of thousands of people have downloaded the app world-wide and participated in the science of meteoritics. The Fireballs in the Sky app allows users to get involved with the Desert Fireball Network research, supplementing DFN observations and providing enhanced coverage by reporting their own meteor sightings to DFN scientists. Fireballs in the Sky reports are used to track the trajectories of meteors – from their orbit in space to where they might have landed on Earth.

Led by Phil Bland at Curtin University in Australia, the Desert Fireball Network (DFN) uses automated observatories across Australia to triangulate trajectories of meteorites entering the atmosphere, determine pre-entry orbits, and pinpoint their fall positions. Each observatory is an autonomous intelligent imaging system, taking 1000×36 Megapixel all-sky images throughout the night, using neural network algorithms to recognize events. They are capable of operating for 12 months in a harsh environment, and store all imagery collected. We developed a completely automated software pipeline for data reduction, and built a supercomputer database for storage, allowing us to process our entire archive. The DFN currently stands at 50 stations distributed across the Australian continent, covering an area of 2.5 million km². Working with DFN's partners at NASA's Solar System Exploration Research Virtual Institute, the team is expanding the network beyond Australia to locations around the world. Fireballs in the Sky allows a growing public base to learn about and participate in this exciting research.